SERVICE 1

model 105 Im / Am Stereophomic Tunter

TABLE OF CONTENTS

SEC	TION	PAGE
Intro	oduction	1
	AM Tuner	1
	FM Tuner	1
	AM Alignment Procedure	3
	FM Alignment Procedure	3
	Test Equipment Required for Servicing	4
Part	s List	1~15
Tecl	hnical Specifications	16
	LIST OF ILLUSTRATIONS	
RIG	SURE NO	PAGE
1.	Dial Stringing	5
2.	Front Panel Adjustments and Component Locations	6
3.	Main Chassis Component Locations (Top View)	6
4.		
5.	Rear Panel Adjustment and Component Locations	7
Э.	Rear Panel Adjustment and Component Locations	_
6.		7
	Main Chassis Component Locations (Bottom View)	7
6.	Main Chassis Component Locations (Bottom View) FM/AM Tuner Assembly P100 Component Locations	7 8 8

INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 105 Stereophonic Tuner.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instruction should be read carefully. No attempt should be made to proceed without a good understanding of the operation in the tuner.

The part lists furnish information by which replacement part may be ordered from the Marantz Company. A simple description is included for parts which can be usually be obtained through local suppliers.

The Model 105 is a tuner version of the Marantz's Model 2010 Tuner/Amplifier and almost-the same circuitry as used in the Model 2010 is employed except the audio Amplifier, and power supply circuit.

1. AM Tuner

All components except ferrite bar antenna are mounted on a printed circuit board P100.

The AM signals induced in a ferrite bar antenna are applied to the base of converter transistor H113 through a capacitor of C171, while the local oscillator voltage is injected to the emitter of H113 through a capacitor C172. Both AM signals and oscillating voltage are mixed at the base-emitter junction and converted into 455KHz intermediate frequency. The resulting IF signal is applied to the first IF transformer L116 consisting of one ceramic filter and two tuned circuits.

The output of L116 is led to the transistor H104 which in turn apply its output to the transistor of next stage H105. The fully amplified IF output is then applied to the diode H123 to detect audible signal through the detector transformer L117. The detected audio signal is filtered and the final audio output is obtained from pin terminal J118 and applied to the output jacks through the function switch.

The DC component of the detected IF signal is used as a AGC voltage to control emitter current of H104 through the resistor R185. A part of IF signal output is also applied to the diode H124 through a capacitor C180 and rectified to obtain DC current for energizing the AM signal strength meter M001.

1.1 Suggestions for AM Tuner trouble shooting

Check for broken AM bar antenna, next try to tune station by rotating fly-wheel tuning knob slowly and observe the AM signal strength meter whether it deflects or not. If the signal strength meter gives a deflection at several frequencies received, no failure may exist in the stages at least preceding final IF transformer L117. Next connect a oscilloscope to the pin terminal J118 and check for audio signals with the tuning meter deflected. If the signal strength meter does not deflect, check the local oscillator circuit. Normal oscillating voltage at the hot end of the oscillator tuning capacitor is about 2 or 3 volts, varying with tuning capacitor position. When measuring oscillating voltage use a RF VTVM, no circuit tester gives correct indication. If the local oscillator voltage is normal, check all voltage distribution in the AM circuits by using a DC VTVM and compare the measured values with those given in the schematic diagram.

2. FM Tuner

All components are mounted on a printed circuit board P100.

FM signals induced by a FM antenna are led to FM antenna coil L101.

These signals are then applied to the FET RF amplifier which in turn applies its output to the next transistor mixer H102 through a high Q tuned circuit.

The mixer convert its input signal into 10.7MHz intermediate frequency and amplifies it at the same time. The H103 is a local oscillator and its output is injected into the base of mixer transistor, the injection voltage is about 40mV.

The 10.7 MHz front end output is led to the next IF section. The IF section consists of five stage of IF amplifier and one stage of sub IF amplifier. Two pieces of ceramic filters are also used to obtain high selectivity, a pair of symmetrical diode limiters are also employed for the best limiting characteristics, improved capture ratio and good AM suppression. A part of IF amplifier H105 output is rectified by the diode H115, H116 and its DC output is fed back to the gate of FET RF amplifier to decrease the gain with increased signal strength.

2.1 Muting and Auto-Stereo Switching Circuits

The muting circuit consisting of all solid-state electrical switching has been incorporated in the Model 105.

The DC voltage obtained by rectifing the sub IF output signal from the H109 is applied to the base of H110 and turns on it, if the sub IF output is greater than predetermined level (muting threshold level).

When H110 turns on, the muting switch transistor H111 is turned on, thus decreasing the emitter collector resistance to near zero ohm and allowing emitter current path to the Final IF amplifier H108.

When the input signal is lower than the predetermined level, the DC output obtained is small and can not turn on the H110, thus the H110 keeps its turn off state and this makes the switch transistor keep H111 turn off, then no emitter current is supplied to the H108 and signals below the threshold level are muted out.

The muting threshold level can be varied by adjusting the trimming resistor R153.

The DC voltage obtained is also used to make the Auto-Stereo switching transistor H112 turn on and off, and used to energizing the signal strength merer M001.

2.2 MPX Stereo Decoding Circuit

A Non-equalized audio signal from the FM detector is applied through the phase adjuster network of C148 and C161 to input terminal pin \bigcirc on the MPX decoder IC H114. The MPX decoder IC consists of a stereo decoder and postamplifier for the output. The right and left channel signals decoded by the stereo decoder H114, appear at pin \bigcirc (right channel) and pin \bigcirc (left channel), respectively. These signals are passed through the low-pass filters and de-emphasis networks to eliminate undesirable residual switching signals and are then delivered to postamplifier input pin \bigcirc (right channel) and pin \bigcirc (left channel), respectively. The signals amplified in the postamplifiers to the required level (approximately 10 dB) are delivered to pin \bigcirc (right channel) and pin \bigcirc (left channel), and are then passed through C169 and C168 to pin terminals J114 and J115, hence, through function switches to the "OUTPUT" terminal. Pin \bigcirc on the MPX IC H114 is connected through R163 to the collector of the autostereo switch transistor H112, which turns on or off according to the incoming FM signal strength, thereby automatically switching between the stereophonic and monaural operations. The H112 turns on or off in accordance with whether the FM signal strength is more or less than approximately $25\mu V$.

2.3 Suggestion for Trouble Shooting of FM Tuner

2.3.1 Symptom: No FM Reception

First turn on the power switch and try to tune FM stations. Rotate the fly-wheel tuning knob slowly and observe the FM signal strength meter. If the signal strength meter deflect at several frequencies received, the tuner circuits preceding the discriminator circuit may have no failure. When no reading is obtained in the meter, check FM local oscillator circuit, using a RF VTVM. The normal local oscillator voltage is one or two volts (rms) at the tuning capacitor, depending on the tuning capacitor position. If the local oscillator voltage is normal, next check all voltage distribution in the FM Front End and IF amplifier unit and compare them with those shown in the circuit diagram. When signal strength meter deflects but no sound is obtained, check audio circuits, using high sensitive oscilloscope.

2.3.2 Symptom: No Stereo Separation

First check the "MONO" switch is in normal out position. Connect a FM RF signal generator output modulated by a stereo modulator to the rear FM antenna terminals, and check the stereo beacon is turned on or not. If not turned on, check for 19 KHz pilot signal and 38 KHz switching signal, using an oscilloscope.

3. AM Alignment Procedure

3.1 AM IF Alignment

- 1. Connect a sweep generator to the test point (A) or J107 and an alignment scope to the test point (B).
- 2. Rotate each core of IF transformer L110 and L117 for maximum height and flat top symmetrical response.

3.2 AM Frequency Range and Tracking Alignment

- 1. Set AM signal generator to 525 KHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end.) and adjust the oscillator coil L115 for maximum audio output.
- 2. Set the signal generator to 1650 KHz. Place the tuning pointer in the high frequency end and adjust the oscillator trimmer on the oscillator tuning capacitor (CA-2) for maximum audio output.
- 3. Repeat the step 1 and 2 until no further adjustment is necessary.
- 4. Set the generator to 600 KHz and tune the receiver to the same frequency and adjust a slug core of AM ferrite rod antenna for maximum output.
- 5. Set the generator to 1400 KHz and tune the receiver to the same frequency and adjust the trimming capacitors of Antenna (CA-1) for maximum output.
- 6. Repeat the step 4 and 5 until no further adjustment is necessary.

Note: During tracking alignment reduce the signal generator output as necessary to avoid AGC action.

4. FM Alignment Procedure

- 1. Connect a FM signal generator to the FM antenna terminals and a oscilloscope and an audio distortion analyzer to the tape output jacks on the rear panel.
- 2. Set the FM SG to 87.5 MHz and provide about 3 to $5 \mu V$. Place the tuning pointer at the low frequency end by rotating the tuning knob and adjust the core of oscillator coil L103 to obtain maximum audio output.
- 3. Set the FM SG to 108.5 MHz and provide about 3 to 5 μ V output. Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor C187 for Maximum output.
- 4. Repeat the step 2 and 3 until no further adjustment is necessary.
- 5. Set the FM SG to 90 MHz and tune the receiver to the same frequency. Decrease signal generator output until the audio output level decreases with the decreasing generator output. Adjust the antenna coil L101, RF coil L102 and IF transformer L105 for minimum audio distortion.
- 6. Set the FM SG to 106 MHz and tune the receiver to the same frequency. Adjust the trimming capacitor CF-1, CF-2 for minimum distortion.
- 7. Repeat the step 5 and 6 until no further adjustment is necessary.
- 8. Connect a DC VTVM with 1 volt range selected to the test point © (J120) and adjust the secondary core (upper) of discriminator transformer L107 so that no voltage reading is obtained on the VTVM at no signal.
 - Next set the FM SG to 98 MHz and increase the output level to 1 $K\mu V$, then tune the receiver to the same frequency so that no deflection is obtained on the VTVM.
 - Adjust primary core (bottom) of L107 for minimum distortion, and adjust the L108 for the maximum deflection of FM signal strength meter M001.



4.1 STEREO Separation Alignment

- 1. Set the FM SG to provide 1 $K\mu V$ at 98 MHz.
 - Tune the receiver to the same frequency perfectely (so that the VTVM connected to the test point © gives no reading).
- 2. Modulate the FM SG with stereo composite signal consisting of subchanged signal only (of course a pilot signal must be included).

Adjust the core of L110 for maximum audio output, then, modulate the FM SG with a stereo composite signal consisting of L or R channel only, and adjust the trimming resistor R161 for maximum and equal separation in both channels.

4.2 Muting Circuit Alignment

1. Set the FM SG output to provide 25 μ V (IHF) at 98 MHz and tune the receiver to the same frequency.

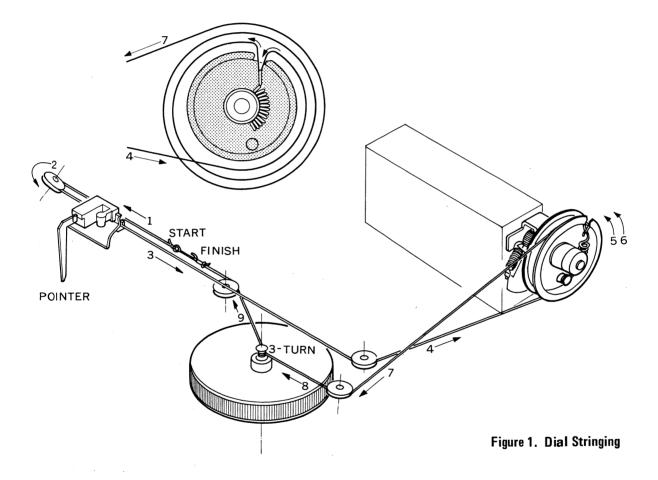
Adjust the trimming resistor R153 for the threshold level of 25 μ V (during this adjustment turn the MUTING pushswitch "on").

5. Test Equipment Required for Servicing

Table 1 lists the test equipment required for servicing the Model 105 Tuner.

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal source for AM align- ment
Test Loop		Used with AM Signal generator
FM Signal Generator	Less than 0.3% distortion	Signal source for FM align- ment
Stereo Modulator	Less than 0.3% distortion	Stereo separation alignment and trouble shooting
Audio Oscillator	Weston Model CVO-100P, less than 0.02% residual distor- tion is required	Sinewave and squarewaves sig- nal source
Oscilloscope	High sensitivity with DC horizontal and vertical amplifiers	Waveform analysis and Trou- ble Shooting, and ASO align- ment
VTVM	With AC, DC, RF range	Voltage measurements
Circuit Tester		Trouble Shooting





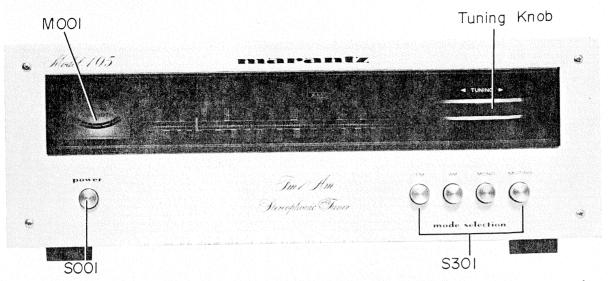


Figure 2. Front Panel Adjustments and Component Locations

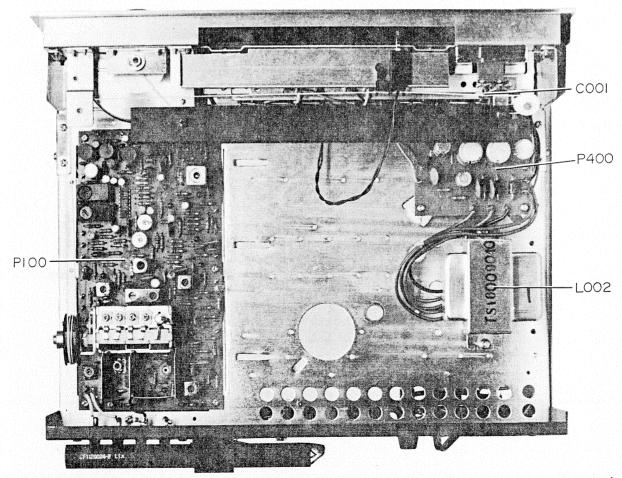


Figure 3. Main Chassis Component Locations (Top View)

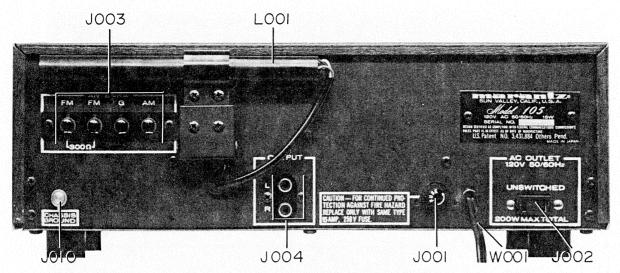


Figure 4. Rear Panel Adjustment and Component Locations

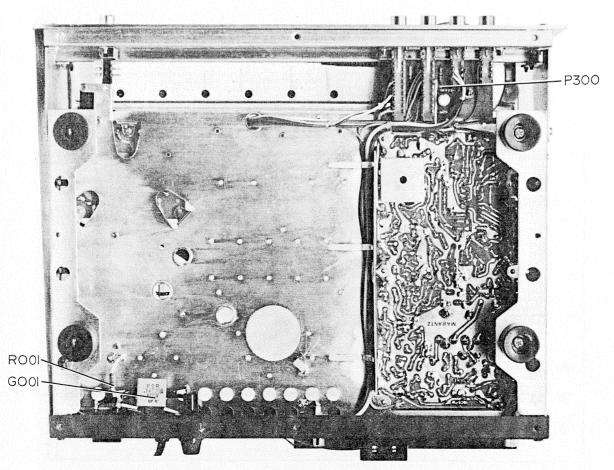


Figure 5. Main Chassis Component Locations (Bottom View)

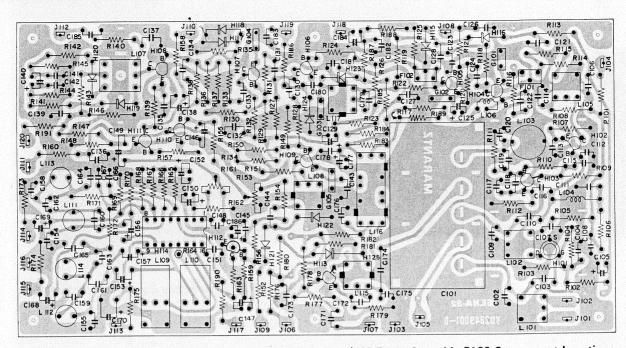


Figure 6. FM/AM Tuner Assembly P100 Component Locations

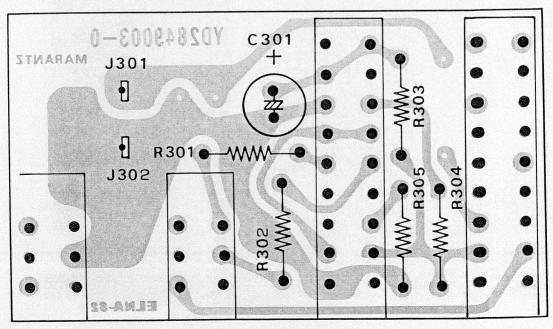


Figure 7. FM, AM, Mono and Muting Switch Assembly P300 Component Locations

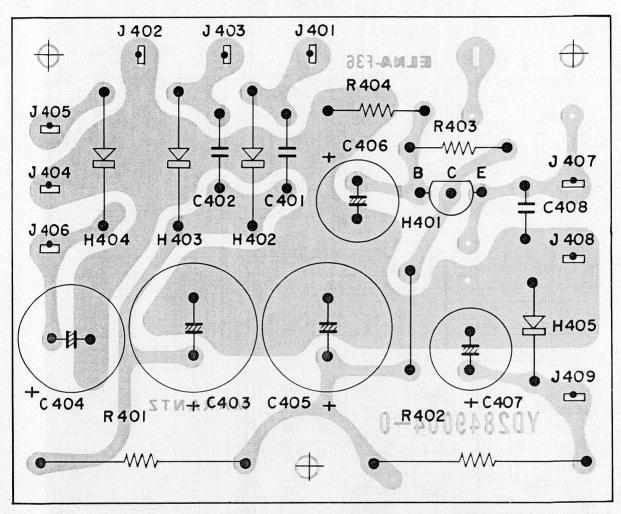


Figure 8. Power Supply Assembly P400 Component Locations

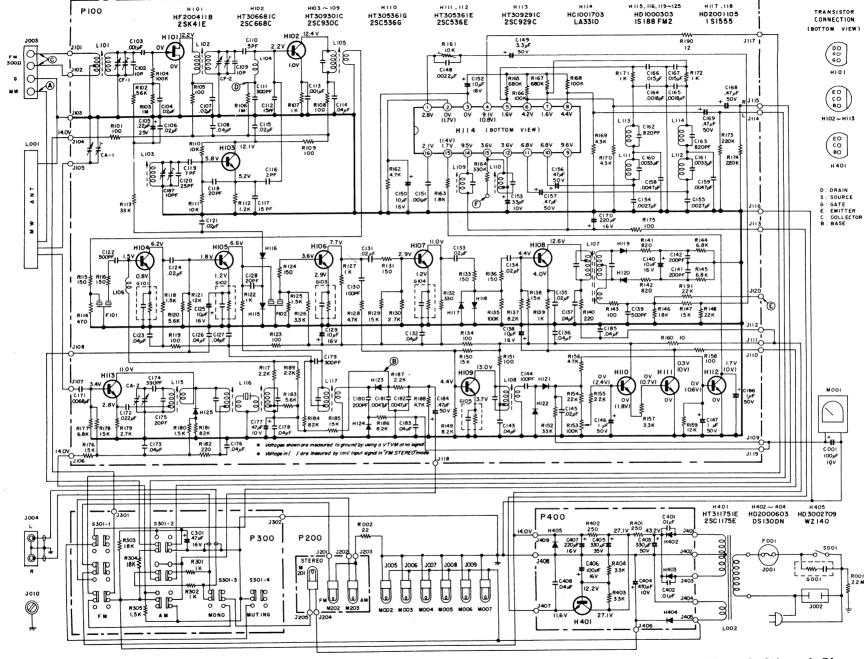


Figure 9. Schematic Diagram

PARTS LIST

REF. DESIG.	PART NO.	DESCRIPTION	REF. DESIG.	PART NO.	DESCRIPTION	ON
P100	YD2849001 ZZ2849001	P.W. Board Tuner P.W. Board Assembly	R159 R160	RT0512314 RT0510014		12ΚΩ 10Ω
R101	RT0510114	RESISTOR (All resistors are $\pm 5\%$, 100Ω	R161 R162	RA0103020 RT0547214	Trimming	10ΚΩ(B) 4.7ΚΩ
R102	RT0556314	¼W and carbon 56KΩ	R163	RT0518214		1.8ΚΩ
R103	RT0510514	type, unless 1MΩ	R164	RC1033412	Solid	330KΩ±10%, ½W
R104	RT0510414	otherwise 100KΩ	R165	RT0568414		680ΚΩ
R105	RT0510114	indicated.) 100Ω	R166	RT0510414		100ΚΩ
R106	RT0510514	1ΜΩ	R167	RT0568414		680ΚΩ
R107	RT0510214	1ΚΩ	R168	RT0510414		100ΚΩ
R108	RT0510114	100Ω	R169	RT0543214		4.3ΚΩ
R109	RT0510114	100Ω	R170	RT0543214		4.3ΚΩ
R110	RT0510314	10ΚΩ				
			R171	RT0510214		1ΚΩ
R111	RT0510314	10ΚΩ	R172	RT0510214		1ΚΩ
R112	RT0512214	1.2ΚΩ	R173	RT0522414		220ΚΩ
R113	RT0533314	33KΩ	R174	RT0522414		220ΚΩ
R114	RT0547114	470Ω	R175	RT0510114		100Ω
R115	RT0515114	150Ω	R176	RT0515214		1.5ΚΩ
R116	RT0515114	150Ω	R177	RT0568214		6.8ΚΩ
R117	RT0522214	2.2ΚΩ	R178	RT0515314		15ΚΩ
R118	RT0515214	1.5KΩ	R179	RT0527214		2.7ΚΩ
R119	RT0510114	100Ω 5.6KΩ	R180	RT0515214		1.5ΚΩ
R120	RT0556214	5,07,12	D101	DT0502214		82ΚΩ
R121	RT0512314	12ΚΩ	R181 R182	RT0582314 RT0522114		220Ω
R122	RT0512314	1ΚΩ	R183	RT0556214		5.6ΚΩ
R123	RT0510114	100Ω	R184	RT0582314		82ΚΩ
R124	RT0515114	150Ω	R185	RT0515314		15ΚΩ
R125	RT0515214	1.5ΚΩ	R186	RT0582214		8.2ΚΩ
R126	RT0533214	3.3ΚΩ	R187	RT0522214		2,2ΚΩ
R127	RT0510214	1ΚΩ	R188	RT0547214		4,7ΚΩ
R128	RT0547214	4.7ΚΩ	R189	RT0522214		2,2ΚΩ
R129	RT0515314	15ΚΩ	R190	RT0512014		12Ω
R130	RT0527214	2.7ΚΩ	1			
D121	DT0515114	150Ω	R191	RT0522314		22ΚΩ
R131	RT0515114 RT0533114	330Ω				
R133	RT0535114	150Ω			CAPACITORS	514 C 414 C
R134	RT0510114	100Ω	C101	CA3240007	Variable	FM-3, AM-2
R135	RT0510414	100ΚΩ	0400	554040004	0	GANG
R136	RT0515114	150Ω	C102	DD1210001	Ceramic	10pF±10%
R137	RT0582214	8.2ΚΩ	C103	DK1710201	Ceramic	0.001μF±20%
R138	RT0515314	15ΚΩ	C104	DK1820302	Ceramic	0.02µF ⁺¹⁰⁰ %
R139	RT0510214	1ΚΩ	C105	EM2240251	Electroly	0.22μF 25V
R140	RT0522114	220Ω	1	1	•	0.00 E+100 ₀
	-	· ·	C106	DK1820302	Ceramic	0.02μF ⁺¹⁰⁰ %
R141	RT0582114	820Ω 2222	C107	DK1820302	Ceramic	$0.02 \mu F_{-0}^{+100}$ %
R142	RT0582114	820Ω			2 - 2	
R143	RT0510114	100Ω	C108	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %
R144	RT0568214	6.8KΩ	C109	DD1210001	Ceramic	10pF±10%
R145	RT0568214 RT0518314	6.8KΩ 18KΩ	C110	DD1105001	Ceramic	5pF±0.5pF
1	RT0515314	15ΚΩ	100	551100001	Cordinio	opi 10.0pi
R147	RT0515314	22ΚΩ	C111	DD1530101	Ceramic	300pF±5%
R149	RT0522314	8.2KΩ	C112	DD1615003	Ceramic	15pF±10%
R150	RT0502214	15ΚΩ	C113	DK1710201	Ceramic	0.001µF±20%
			C114	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %
R151	RT0510114	100Ω	"	510104002	Cordinio	
R152	RT0533314	33ΚΩ	C115	DK1820302	Ceramic	0.02μF ⁺¹⁰⁰ %
R153	RA0104015	Trimming 100KΩ(B)	C116	DD1102004	Ceramic	2pF±0.5pF
R154	RT0522314	22ΚΩ	C118	DD1102004	Ceramic	15pF±10%
R155	RT0522314	22ΚΩ	C117	DD1515003	Ceramic	20pF±5%
R156	RT0547314	47ΚΩ	C119	DD1320001	Ceramic	7pF±1pF
R157	RT0533214	3.3KΩ	C120	DD1525002	Ceramic	25pF±5%
R158	RT0510114	100Ω			l	•
			<u> </u>	<u> </u>	ļ	

REF. DESIG.	PART NO.	DES	CRIPTION	REF. DESIG.	PART NO.	DESCRIP	ΓΙΟΝ
C121	DK1920202	Coramia	0.02μF ⁺¹⁰⁰ %	C171	DF1768201	Film	0.0068µF±20%
C121	DK1820302	Ceramic	I	C172	DF1722301	Film	0.022µF±20%
C122	DD1650101	Ceramic	500pF±10%	C173	DF1740301	Film	0.04µF±20%
C123	DK1840302	Ceramic	0.04µF ⁺⁸⁰ %	C174	DF6539101	Film	390pF±5%
C123	DK 1840302	Ceranne		C175	DD1620001	Ceramic	20pF±10%
C124	DK1820302	Ceramic	0.02μF ⁺¹⁰⁰ %	C176	DF1740301	Film	0.04µF±20%
			-	C177	EA4760109	Electroly	47µF 10V
C125	EA1060169	Electroly	10μF 16V	C178	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %
C126	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %				
			1	C179	DD1530101	Ceramic	300pF±5%
C127	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %	C180	DD1620101	Ceramic	200pF±10%
C128	DD1620001	Ceramic	20pF±10%				
C129	EA1060169	Electroly	10μF 16V	C181	DF1647201	Film	0.0047µF±10%
C130	DD1610101	Ceramic	100pF±10%	C182	DF1647201	Film	0.0047μF±10%
0130	BBIGIOIO	Octaniic	10061 = 1070	C183	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %
			+100				
C131	DK1820302	Ceramic	0.02μF ⁺¹⁰⁰ %	C184	EA4740501	Electroly	0.47μF 50V
0400	544040000		0 0 4 E+80 ₄ /	C185	DK1840302	Ceramic	0.04µF ⁺⁸⁰ %
C132	DK1840302	Ceramic	0.04µF ⁺⁸⁰ %	C186	EA1050509	Electroly	1μF 50V
C133	DK1820302	Ceramic	0.02μF ⁺¹⁰⁰ %	C180	CT1100008	Trimming	10pF
C 133	DK 1620302	Ceramic	0.02μ F ₋₀ %	10107	C11100006	irimining	ТОРГ
C134	DK1820302	Ceramic	0.02μF ⁺¹⁰⁰ %			MISCELLANEOU	IS.
C 134	DK 1020302	Ceranne		G101	BF4030001	Printed Compo.	0.04μF+270Ω
C135	DK1820302	Ceramic	0.02μF ⁺¹⁰⁰ %	G101	BF2230008	Printed Compo.	0.04μ1 127032
0.00	Dittion	our arrive	-	G102	BF2230008 BF2230007	Printed Compo.	0.022μΓ+27032
C136	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %	G103			0.022μF+08032
					BF2230006 BF2230006	Printed Compo. Printed Compo.	$0.022\mu F + 1K\Omega$
C137	DK1840302	Ceramic	0.04μF ⁺⁸⁰ %	G105	BF2230006	Frinted Compo.	0.022μΓ11Κ32
C138	EA1060169	Electroly	-20 10μF 16V	F101	FF1107004	Ceramic Filter	CFS107M
C139	DD1650101	Ceramic	500pF±10%	F101	FF1107004	Ceramic Filter	CFS107M
C139	EA1060169		10μF 16V	102	FF1107004	Ceramic Finer	CF3107W
C 140	EA1000109	Electroly	10μ1-10 V			COILS AND TRA	NICEODMEDS
C141	DD1620101	Ceramic	200pF±10%	L101	LA1004606	Ant Coil	FM
C142	DD1620101	Ceramic	200pF±10%	L101	LA1027809	RF Coil	FM
	1		$0.04 \mu F_{-20}^{+80}\%$	L102	LO1203601	OSC Coil	FM
C143	DK1840302	Ceramic	$0.04 \mu F_{-20}$	L104	LC1751001	Choke Coil	0.75μH
C144	DD1610101	Ceramic	100pF±10%	L105	LI1001601	IFT	FM .
C145	DK1820302	Ceramic	0.02µF ⁺¹⁰⁰ %	L106	LC1223002	Choke Coil	22μΗ
		Ceramic	•	L107	LI1401623	IFT	FM
C146	EA1050509	Electroly	1μF 50V	L108	LI1015602	IFT	FM
C147	EA1050509	Electroly	1μF 50V	L109	LS1031001	MPX Coil	19KHz
C148	DF1722201	Film	0.0022µF±20%	L110	LS1031004	MPX Coil	38KHz
C149	EA3350509	Electroly	3.3µF 50V				
C150	EA1060169	Electroly	10μF 16V	L111	LC2226004	Choke Coil	22mH
	1			L112	LC2226004	Choke Coil	22mH
C151	DF1610201	Film	0.001µF±10%	L113	LC2226004	Choke Coil	22mH
C152	EA1060169	Electroly	10μF 16V	L114 .	LC2226004	Choke Coil	22mH
C153	EA3360109	Electroly	33μF10 V	L115	LO1001042	OSC Coil	AM
C154	DF1627201	Film	$0.0027 \mu F \pm 10\%$	L116	LI1028002	IFT	AM
C155	DF1627201	Film	0.0027µF±10%	L117	LI1001048	IFT	AM
C156	EA4740501	Electroly	0.47μF 50V				
C157	EA4740501	Electroly	0.47μF 50V				
C158	DF1647201	Film	0.0047µF±10%			SEMICONDUCT	ORS
C159	DF1647201	Film	0.0047µF±10%	H101	HF200411B	FET	2SK41E
C160	DF1533205	Film	0.0033µF±5%	H102	HT306681C	Transistor	2SC668C
				H103	HT309301C	Transistor	2SC930C
C161	DF1533205	Film	0.0033µF±5%	H104	HT309301C	Transistor	2SC930C
C162	DF5582101	Film	820pF±5%	H105	HT309301C	Transistor	2SC930C
C163	DF5582101	Film	820pF±5%	H106	HT309301C	Transistor	2SC930C
C164	DF1618205	Film	0.0018µF±10%	H107	HT309301C	Transistor	2SC930C
C165	DF1618205	Film	0.0018µF±10%	H108	HT309301C	Transistor	2SC930C
C166	DF1615301	Film	$0.015 \mu F \pm 10\%$	H109	HT309301C	Transistor	2SC930C
C167	DF1615301	Film	0.015μ F±10%	H110	HT305361G	Transistor	2SC536G
C168	EA4740501	Electroly	0.47μF 50V	1			
C169	EA4740501	Electroly	0.47μF 50V	H111	HT305361E	Transistor	2SC536E
					,		
C170	EA2270169	Electroly	220μF 16V	H112	HT305361E	Transistor	2SC536E

REF. DESIG.	PART NO.	DESCRIPTION						
H113	HT309291C	Transistor	2SC929C					
H114	HC1001703	IC	LA3310					
H115	HD1000303 HD1000303	Diode	1S188FM2					
H116 H117	HD2001105	Diode Diode	1S188FM2					
H118	HD2001105	Diode	1S1555 1S1555					
H119	HD1000303	Diode	1S188FM2					
H120	HD1000303	Diode	1S188FM2					
H121	HD1000303	Diode	1S188FM2					
H122 H123	HD1000303 HD1000303	Diode Diode	1S188FM2					
H124	HD1000303	Diode	1S188FM2 1S188FM2					
H125	HD1000303	Diode	1S188FM2					
		MISCELLANEOUS	S					
J101	YP1000099	Plug						
J102	YP1000099	Plug						
J103	YP1000099	Plug						
J104 J105	YP1000099 YP1000099	Plug Plua						
J105	YP1000099	Plug						
J107	YP1000099	Plug						
J108	YP1000099	Plug						
J109	YP1000099	Plug						
J110	YP1000099	Plug						
J111	YP1000099	Plug						
J112 J113	YP1000099 YP1000099	Plug Plug						
J114	YP1000099	Plug						
J115	YP1000099	Plug						
J116	YP1000099	Plug						
J117	YP1000099	Plug						
J118	YP1000099	Plug						
J119	YP1000099	Plug						
J120	YP1000099	Plug						
0906	282110901	Shield						
0907 0908	286710901	Shield						
1110	285010902 62031650W	Shield Lug						
		Ū	_					
P400	YD2849004 ZZ2849004	P.W. Board P.W. Board Assem	Power bly					
			-					
1		RESISTORS						
R401	GJ1025102	Oxide	250Ω±10%2W					
R402	GJ1025102	Oxide	250Ω±10%2W					
R403 R404	RT0533314 RT0533314	Carbon Carbon	33KΩ±5%¼W 33KΩ±5%¼W					
11404	111 00000 14		J3K44±576/4VV					
		CAPACITORS	±100					
C401	DK1810351	Ceramic	0.01μF ⁺¹⁰⁰ %500∨					
C402	DK1810351	Ceramic	0.01μF ⁺¹⁰⁰ %500∨					
C403	EA3370509	Electroly	330μF 50V					
C404	EA4770109	Electroly	470μF 10V					
C405 C406	EA3370359 EA1070169	Electorly	330μF 35V					
C406	EA1070169 EA2270169	Electroly Electroly	100μF 16V					
		-	220μF 16V					
C408	DK1840301	Ceramic	0.04μF ⁺¹⁰⁰ % 50V					
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REF. DESIG.	PART NO.	DESCRIP	TION
		SEMICONDUCTO	RS
H401	HT311751E	Transistor	2SC1175E
H402	HD2000603	Diode	DS130DN
H403 H404	HD2000603 HD2000603	Diode	DS130DN DS130DN
H405	HD3002709	Diode Diode	WZ140
		MISCELLANEOU	e
J401	YP1000099	Plug	3
J402	YP1000099	Plug	
J403	YP1000099	Plug	
J404 J405	YP1000099 YP1000099	Plug	
J406	YP1000099	Plug Plug	
J407	YP1000099	Plug	
J408	YP1000099	Plug	
J409	YP1000099	Plug	
0404	282716002	Bracket	
0405	282711202	Shaft	
0406	282711203	Shaft	,
0408 0409	285020101 285016003	Partitioner Bracket	
0410	285016003	Bracket	
0412	285012201	Sticker	
0421	257710602	Bearing	
0422	141511801	Spacer	
0508	285016007	Bracket	
0509	173011203	Shaft	
0510	257726201	Pulley	
0517 0611	282711801 51040306A	Spacer F.H.M. Screw	
0615	51100306A	B.H.M. Screw	
0618	51100306A	B.H.M. Screw	
0621	51100306A	B.H.M. Screw	
0623	51100306A	B.H.M. Screw	
0625 0626	51100306A 51100306A	B.H.M. Screw B.H.M. Screw	
P300	VD2040000	D.W. D	
P300	YD2849003 ZZ2849003	P.W. Board P.W. Board Assemb	oly
-		. ,	
		RESISTORS	
R301	RT0510214	Carbon	1KΩ±5%¼W
R302	RT0510214	Carbon	1KΩ±5%¼W
R303 R304	RT0518314 RT0518314	Carbon Carbon	18KΩ±5%¼W 18KΩ±5%¼W
R305	GT0515212	Carbon	1.5KΩ±5%½W
		MICOELLANGOLI	6
C301	EA4760169	MISCELLANEOUS Electroly	5 47μF 16V
S301	SP0604003	Pushswitch	Band Selector
J301	YP1000099	Dive	
J302	YP1000099	Plug Plug	
S001	SP0301001	Pushswitch	
M001	IM1104203	DC Meter	Signal Strength
C001	EA1070109	Electroly	100μF 10V
0417	285011801	Spacer	

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REF. DESIG.	PART NO.	DESCRIPTION
0501	285016009	Bracket
0503	263711203	Shaft Pullev
0505	257726201	Fulley
0502	285016008	Bracket
1436 1437	263711203	Shaft Pulley
1437	257726201	Fulley
0414	281827101	Holder
0631 J005	51570306B YJ0800013	P.H. Tapt Screw Socket
J005 J006	YJ0800013	Socket
J007	YJ0800013	Socket
J008	YJ0800013	Socket
J009 M002	YJ0800013 IN1008007	Socket Lamp
M003	IN1008007	Lamp
M004	IN1008007	Lamp
M005	IN1008007	Lamp
M006	IN1008007	Lamp
0415	282716003	Bracket ·
0518	282710701	Sheet
		B.W. B.
P200	YD2849002 ZZ2849002	P.W. Board P.W. Board Assembly
	222043002	, , , , , , , , , , , , , , , , , , , ,
		MISCELLANEOUS
M201 M202	IN1006301 IN1006301	Lamp 6.3V 40mA Lamp 6.3V 40mA
M203	IN1006301	Lamp 6.3V 40mA
R002	RC1022012	Resistor Solid 22Ω±10%½W
J201	YP1000099	Plug
J201	YP1000099	Plug
J203	YP1000099	Plug
J204	YP1000099	Plug
J205	YP1000099	Plug
0413	282727401	Reflector
0619	51570306B	P.H. Tapt Screw
0630 0418	51570305B 282705101	P. H. Tapt Screw Guide
0416	282705101	
E	284916040	Bracket Assembly
0202	284926501	Indicator
0703	284916001 53110403E	Bracket Hexagon Nut
0816 0818	54020401E	Flat Washer P
0819	54050400R	T.L. Washer OR
0821	55060307F	T.R. Rivet
0822	54050300R	T.L. Washer OR B.H.M.Screw
0824 0826	51100306S 51100308S	B.H.M.Screw
0827	53110303E	Hexagon Nut
0832	51100308S	B.H.M. Screw Hexagon Nut
0833 J002	53110303E YJ0400018	Hexagon Nut Jack AC Outlet
J002 J003	YJ0104004	Terminal Ant.
J004	YT0202007	Terminal Output
J010	YL0301021	Terminal Ground
0704	284916021	Bracket
	207010021	2.00

REF. DESIG.	PART NO.	DESCRIPTION								
0705	284916022	Bracket								
0706	284916023	Bracket								
0707	284916024	Bracket								
0718	145525903	Bush								
0723	282125901	Bush								
0725	284906701	Cap								
0727	284906702	Cap								
0814	51100306S	B.H.M. Screw								
0828	53110303A	Hexagon Nut								
0829	54050300R	T.L. Washer OR								
0830	51060316A	F.H.M. Screw								
0831	55060305F	T.R. Rivet								
W001	YC0240010	AC Cord								
G001	BF1040001	Printed Comp.								
F001	FS1005007	Fuse 0.5A								
L001	LF1120024	Ant Coil								
0711	257816005	Bracket								
0712	257816006	Bracket								
0713	550203041	S.H. Rivet								
0714	281927103	Holder								
0806	51100308S	B.H. M. Screw								
0807	54050300R	T.L. Washer OR								
0808	53110303E	Hexagon Nut								
0810	51100310S	B.H. M. Screw								
0811	53110303E	Hexagon Nut								
R001	GT0522512	Resistor 2.2MΩ±5% ½W								
1133	62031650W	Lug								
0903	282715901	Drum								
0904	71101569M	Spring								
0915	51650304D	Set Screw H.P.								
В	284927340	Fly Wheel Assembly								
0427	257706302	Escutcheon								
0429	257727301	Fly Wheel								
0431	285011201	Shaft								
0432	285011202	Shaft								
0607	53110603E	Hexagon Nut								
0608	54040602N	Spring Washer								
0609	54020601E	Flat Washer P								
D	285010340	Pointer Assembly								
0526	281810301	Pointer								
0527	285010301	Pointer								
0528	281805301	Cover								
M007	IN1008018	Lamp								
С	285000640	Dial String Assembly								
0512	120225801	Hook								
0513	72080802A	String								
0635	56382540G	Eyelet								

1 0103 204900301 ESCUTCHEON	UL Caution Do Not Remove
0103 284906301 Escutcheon 0211 257886101 Label	Do Not Remove
0104 282740101 Frame 0212 257886102 Label	Cover
0106 281825905 Bush 0213 257886103 Label	See Marking on Bottom
0108 284905301 Cover	Do Not Use As
	Handle
0302 51122608E T.H.M. Screw 0304 51100406S B.H.M. Screw 0306 51100406S B.H.M. Screw	
0307 54020401S Flat Washer	
W002 YW2849001 Wire Material 0424 257710601 Bearing	
W003 YX2849001 Wire Material 0425 281810601 Bearing 0433 281912002 Insulator	
0121 275005701 1	
0521 284930201 Dial 0523 282705302 Cover	
0532 282626901 Protector	
0603 51640412S Set Screw C.P. 0604 54040402N Spring Washer	
0310 51100410A B.H.M. Screw 0605 53110403E Hexagon Nut	
0312 54040402A Spring Washer 0613 51100306A B.H.M. Screw	
1026 285010501 Chasiss 0614 54050300R T.L. Washer OR 1033 138200503 Clamper Clamper	
1103 51570408B P.H. Tapt Screw Spring Washer	
1108 51570306B P.H. Tapt Screw 1113 51570306B P.H. Tapt Screw 1122 51570306B P.H. Tapt Screw 1124 51100306S B.H.M. Screw 1126 51570306B P.H. Tapt Screw 1127 54050300R T.L. Washer OR 1128 59030805P Washer	
1131 51570306B P.H. Tapt Screw	
1132	
1117	
L002 TS1600904 Power Transf. 120V	
LOOZ TOTOGOSON TOWER TRAISI.	
0112 281815401 Knob 0118 284925701 Lid	
0119 257711803 Spacer	
0120 282825702 Lid	

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TECHNICAL SPECIFICATIONS

FM SECTION:

IHFM Usable IHFM Select Capture Rati Image Reject Signal to Noi Signal to Noi Total Harmo Total Harmo Frequency R	uency Range e Sensitivity ivity				· · · · · · · · · · · · · · · · · · ·												· · · · · · · ± 1			 	. 3. 5 5 6 6 (z-15	0μ V 0dB 5dB 0dB 5dB 5dB 0.2% 0.5%
AM SECTIO	ON:																					
Usable Sensi- Selectivity Image Reject Signal to No Frequency F	uency Range tivity tion Ratio at ise Ratio Response, —3d onic Distortion		z			· · · · · ·						· · · · · ·	 						•	 50		10µ V 20dB 10dB 13dB KHz
																					1201	, AC
•	irements																			50	to 6	0 Hz
Power Consu Dimensions	umption Panel Width Panel Height Depth		•				• •	• •				 	 		 		•				14-1 4-2 11-	1/64 23/32 -1/32
Weight	Unit alone Packed for S																				13	.Z 1D5
*These spec	ifications and	exterior	desia	ns ma	av be	e ch	and	ed f	or i	mpi	rove	me	nt v	vitl	าดเ	ıt a	dv	anc	e r	oti	ce.	

^{*}These specifications and exterior designs may be changed for improvement without advance notice.